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2652

Demand for World Bank Lending

Dilip Ratha

IBRD and IDA lending commitments appear to reflect variations in borrowing countries' need for external financing to meet debt service commitments. This is true during both financial crises and more tranquil times, suggesting that aid may be more fungible than previously believed.

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Summary findings

Bridging the external financing gap has been an important factor in borrowing government's demand for World Bank loans. The demand for IBRD and IDA lending is positively related to an increase in debt service payments and inversely related to a borrowing country's level of reserves.

These two variables explain a large part of the variation in IBRD and IDA lending commitments, not only since the Asian crisis but also during tranquil times over the past two decades. Borrowing to service debt during a crisis is consistent with the Bank's role as a lender of last resort as well as with its core development objectives, but such borrowing during tranquil times may conflict with the Bank's long term objective of reducing poverty.

That investment lending commitments are related to debt service payments implies that aid may be more fungible than previously believed. If Bank lending is fungible and there is no guarantee that a particular Bank loan is financing an identified investment project or program, a case could be made for greater use of programmatic lending (with well-defined conditionality). As developing countries become larger and more integrated with volatile international capital markets, there is also likely to be a greater need for fast-disbursing, contingent program lending facilities from the Bank.

This paper—a product of the Economic Policy and Prospects Group—is part of a larger effort in the group to understand the determinants of official flows to developing countries. Copies of the paper are available free from the World Bank, 1818 H Street NW, Washington, DC 20433. Please contact Sarah Crow, room MC2-358, telephone 202-473-0763, fax 202-522-2578, email address scrow@worldbank.org. Policy Research Working Papers are also posted on the Web at http://econ.worldbank.org. The author may be contacted at dratha@worldbank.org. July 2001. (27 pages)

DEMAND FOR WORLD BANK LENDING

Dilip Ratha*

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* Economic Policy and Prospects Group, World Bank, 1818 H Street NW, Washington, D.C. 20433, tel: +1-202-458-0558, fax:+1-202-522-3277, email: dratha@worldbank.org. This paper has benefited from discussions with Sudhir Chitale, Shantayanan Devarajan, William Easterly, Stefan Koeberle, Ashoka Mody, William Shaw, and Ulrich Zachau. Thanks to Eung Ju Kim for research assistance.

1. Introduction

The World Bank (the Bank, henceforth) is a major source of external finance for developing countries. This is especially so during financial crises when access to private capital markets is greatly reduced even for middle-income countries such as Argentina or Korea. In response to the recent Asian crisis, for example, lending from the International Bank for Reconstruction and Development (IBRD) rose by nearly 50 percent, from $14.6 billion during FY1996-97 to $21.6 billion in FY1998-99.[1]

That bridging the external financing gap was an important consideration for borrowing from the World Bank in recent years is unquestionable. But has this been also important historically, especially during tranquil times? This is the central theme of this paper. The main finding is that the demand for IBRD and IDA loans is positively related to an increase in debt service payments, and inversely related to the level of reserves of a borrowing country. These two variables explain a large part of the variation in IBRD and IDA lending commitments not only since the Asian crisis, but also during tranquil times over the last two decades. To a lesser extent, investor confidence and global liquidity conditions—represented by Institutional Investor country risk rating and the US interest rates respectively—are also found to influence the demand for IBRD lending.

Borrowing from the World Bank for servicing debt during a crisis is consistent with the Bank's role as a lender of last resort as well as its core development objective of poverty reduction.[2] However, such borrowing behavior during tranquil times may not be entirely consistent with the Bank's long-term poverty reduction objective. To make a lasting impact on growth and poverty in a recipient country, Bank loans combined with conditionality should be able to increase investment "even more than one-to-one"

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[1] The World Bank fiscal year runs July-June.

[2] The World Bank's mission is to "fight poverty...for lasting results....by providing resources, sharing knowledge, building capacity, and forging partnerships in the public and private sectors" (World Bank 2000a).

(Easterly 1999). Yet, if Bank loans are used for debt service payments, its impact on investment is almost certain to be less than one-to-one. This may in part explain Easterly's (1999) finding that the aid-investment relationship failed to be greater than one in 82 out of 88 aid-recipient countries during the period 1965-95. Such borrowings also violate selectivity by which official assistance is allocated to countries with good policies (Birdsall et al. 2001). Such lending may also create incentives for borrowers to delay reforms necessary for growth and poverty reduction (Easterly 2000, Svensson 2000).

These results also have some implications for the debate surrounding the roles of various multilateral institutions. There is considerable overlap between the programs of the Bank and the IMF (Collier 2000, p 309), despite a general consensus that the Bank (and other multilateral development banks) should focus on long-term structural issues, leaving short-term crisis financing to the IMF. [3] If, however, a short-term resource transfer motive has a significant influence on developing countries' desire to borrow from the Bank, it would be difficult for the Bank to refrain from providing short-term, counter-cyclical liquidity support, and focus exclusively on long-term structural programs.

The plan of the paper is as follows. The next section discusses the trends in IBRD and IDA lending commitments, and shows that Bank lending commitments appear to be correlated with debt service payments and the level of international reserves in borrowing countries. Section 3 undertakes a more rigorous analysis of this correlation using econometric techniques. After a general discussion of factors that may influence the demand of World Bank lending, this section presents empirical results on

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[3] As Summers (1999) argues, "Going forward the IMF...should not be a source of low-cost financing for countries with ready access to private capital, or long-term support for countries that cannot break the habit of bad policies....Official estimations of the need for external support need increasingly to move from a predominant focus on macro-economic issues to more clearly emphasizing the nature of human needs." The Meltzer Commission on International Financial Institutions also argued that MDBs should stay away from crisis-financing, leaving it to the IMF (see Lerrick 1999).

the relationship between external liabilities of a borrowing country and IBRD/IDA lending commitments. The focus of the econometric analysis is on IBRD lending which constitutes the bulk of World Bank lending. Some preliminary results on IDA lending are also provided. The concluding section of this paper discusses the implications of the main findings.

2. Trends in World Bank lending commitments

The International Bank for Reconstruction and Development (IBRD) was founded in 1945 with the objective of channeling capital, on a cost pass-through basis, from international capital markets to developing countries (Kapur, Lewis and Webb 1997, Gilbert and Vines 2000). IBRD lending commitments rose from $250 million in fiscal 1947—a loan to France for post-war reconstruction—to $22.2 billion in FY1999. The International Development Association (IDA) was created in 1960 to provide long-term (up to 40 years) concessional resources to poor developing countries that were not considered creditworthy for the IBRD's non-concessional lending. (See World Bank 2000a for a list of IBRD and IDA countries.) IDA lending commitments rose from $101 million in fiscal 1961 to a high of $7.5 billion in FY1998. During FY2000, IBRD lending commitments stood at $10.9 billion, and IDA lending commitments at $4.4 billion.

2.1. IBRD lending

The evolution of IBRD lending volumes is marked by three distinct phases (figure 1). The first phase lasted until fiscal 1979 and was marked by a steady increase in investment lending to finance the post-war reconstruction efforts. Adjustment lending was introduced in the second phase beginning in FY1980 to address structural balance-of-payments difficulties that emerged in many developing countries following the oil crises of the 1970s. The third phase began in the 1990s after the resolution of the debt crisis and the end of the cold war. As governments embraced market economies and embarked on

privatization drives, there was a surge of private capital flows to developing countries. In this phase, IBRD lending commitments exhibited volatility around a rather flat trend line. IBRD lending commitments rose from $14.6 billion in FY96-97 to $21.6 billion in FY98-99, but fell to $10.9 billion in FY2000. These fluctuations came almost entirely from adjustment loans which surpassed investment lending for the first time in history in FY99.

The Bank has been called upon to help bridge the external resource gap in almost every crisis that affected its borrowing members in the last half century. Such "stabilizing" or "counter-cyclical" role of IBRD lending is evident in figure 2: IBRD lending commitments (deflated by the GDP of low- and middle-income countries) rose sharply during the debt crises of the 1980s, declined in the early 1990s, and then rose sharply again during the recent Asian crisis. The trend in private non-FDI flows was exactly the opposite during this period.[4]

This resource transfer motive is also evident in the form of a high degree of correlation between IBRD lending commitments as a share of GDP of low- and middle-income countries and the ratio of debt service payments[5] to international reserves in developing countries (figure 3a). Such correlation is also present between IBRD commitments and debt service payments on long-term debt (both as share of GDP) in figure 3b which shows a cross-section of 28 IBRD countries in 1998. We will present more analyses of this relationship in the next section.

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[4] World Bank's investment lending has been steadily replaced by private direct investment (FDI) flows, while adjustment loans—which are typically disbursed faster and have shorter maturities than investment loan—show strong counter-cyclicality with respect to private non-FDI flows (Dasgupta and Ratha 2000).

[5] Debt service payments include amortization and interest payments on long-term debt, and the stock of short-term debt (i.e, debt with maturity equal to or under one year). The level of international reserves excludes gold.

2.2 IDA lending

The size of annual IDA lending commitments is significantly smaller than that of IBRD lending in nominal dollar terms. However, since most IDA countries have almost no access to private capital flows (Lensink and White 1998), IDA loans constitute a much larger share of the borrowing countries' GDP. IDA lending is also found to be correlated with the ratio of debt service payments to reserves (figure 4). This is also consistent with a high correlation (72 percent in 1997 and 55 percent in 1998, as noted in UNCTAD 2000, p 124) between disbursements from multilateral creditors and debt service paid in 40-42 least developed countries.

3. Demand for World Bank lending

Since the World Bank lends exclusively to governments (or to others with explicit government guarantee), the demand for its lending arises from the public sector of a member country. Given the external financing needs, a country's decision to borrow from the World Bank depends on the availability of alternative funding from the private, bilateral and other multilateral sources, and on perceived costs and benefits associated with World Bank loans.[6]

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[6] Benefits of Bank loans include favorable borrowing terms (low interest rates, long maturities) and technical assistance. Costs include long loan preparation time and policy conditionalities. Available information suggests that IBRD lending terms are the cheapest among all multilateral development banks, and obviously cheaper than private flows. Preparation time, however, is longer in the case of World Bank loans as these may involve environmental safeguards and consultations with the civil society. Policy conditionalities can be perceived as a benefit or a cost: sometimes a government may desire conditionality to implement politically difficult reforms, or as a signal to attract private investment (since private monitoring and implementation of conditionality may be unworkable, Rodrik 1995). A country's decision to borrow from the Bank may also be guided by political and

In the following econometric analyses, we represent the external financing needs of the public sector by debt service payments relative to the level of international reserves. We include debt service payments of both public and private sectors in recognition of the government's role as a lender of last resort. Private banking debt, in particular short-term debt, has been frequently bailed out by governments, because such debt carries systemic implications (World Bank 2000b, chapter 4). The use of debt service and reserves to represent the public sector external financing gap is arguably better than using current account balance, since the latter includes trade deficit incurred by the private sector and can be corrected, via import compression if necessary, without significant systemic disruption. Also information on debt service payments on outstanding debt are more readily available than that on current account deficit; thus governments are more likely to use the former to estimate the upcoming external financing gap.

For econometric estimation, the demand for IBRD lending is postulated as:

$$log(IBRD/GDP) = c_0 + c_1\, log((LTDS+ST)/GDP) + c_2\, log(FR/GDP)$$
$$+ c_3\, IIR + c_4\, INT + c_5\, DASIA + e \qquad (1)$$

where *IBRD* stands for IBRD lending commitments, *LTDS* stands for principal and interest payments on long-term debt, *ST* for short-term debt, *FR* for the level of international reserves (excluding gold), *IIR* indicates country risk rating from Institutional Investor, *INT* stands for 10 year US treasury rate, and *DASIA* is a dummy for the Asian crisis (which takes the value of 1 during FY1998-1999 and 0 otherwise), and e is the error term with the standard assumptions of a least-squares regression.

The hypothesis behind this equation is that the demand for IBRD lending rises in response to an increase in the debt service payments, and a decline in the level of international reserves. Thus, $c_1 > 0$ and $c_2 < 0$.

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strategic considerations such as colonial past and political alliances, conflict, sanctions etc. (Polak 1991, Alesina and Dollar 1998, Rodrik 1995).

Does this equation suffer from reverse causality by which IBRD/IDA lending may affect the levels of debt service and international reserves? The answer is negative. First, usually there are time lags between Bank lending commitments and disbursements, and even longer grace periods between commitment, and repayment of principal and interest.[7] Secondly, as to the effect on reserves, note that the relationship is postulated to be negative so that Bank lending does not lead to increased reserves in the same period; instead, a decline in reserves leads to increased demand for IBRD borrowing.

The availability of private funding is represented by the country risk rating. An increase in sovereign rating indicates an improvement in investor sentiment towards the borrowing country. Thus, $c_3 < 0$.

However, an improvement in investor confidence may not translate into increased private flows to a country if the global liquidity condition happens to be tight. We have tried to control for this by introducing the US 10 year treasury rate: an increase in interest rates in the US signals tighter global liquidity and discourages private flows to developing countries, which in turn may increase the demand for IBRD lending (using the counter-cyclicality argument). Also, an increase in interest rates usually translates into a larger increase at the short end of the yield curve than at the long end (Romer and Romer 2000). Thus, a rate increase may discourage shorter term borrowing and encourage longer-term borrowing (Dasgupta and others 2000). Since IBRD loans carry significantly longer maturities than private loans, demand for IBRD loans may increase in response to a rate increase. By these arguments, $c4 > 0$. However, since IBRD operates on a cost-plus basis, a rise in the US interest rates may raise the cost

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[7] For this reason, it is arguably better to use lending commitments rather than disbursement or net flows in this equation. Also, the decision variable for the Bank's operations is new lending commitment rather than disbursement or net flow of funds: after lending commitments are made, there is only limited flexibility in varying disbursements from year to year.

of IBRD funding, which may depress the demand for IBRD loans. In the end, the sign of *c4* is an empirical question.

Before presenting empirical results, it is worth noting some conceptual difficulties in separating supply factors from demand factors in the case of IBRD lending. The IBRD intermediates funds, and instead of maximizing profits, it charges a fixed spread over its borrowing costs. Therefore, the supply of IBRD lending is bounded above by its callable (and usable) capital at the aggregate level, and by guidelines on portfolio concentration limits at the country level. Since there has never been a call on IBRD's callable capital and there is sufficient "head room" to make additional loans, IBRD lending commitments to individual countries—with the exception of a few countries that are near portfolio concentration limits—are largely demand-determined. However, because the financial strength of the IBRD is based in part "in the record of its borrowing members in meeting their debt-service obligations to it" (World Bank 2000a, p 110), a desire to enable members to service debt—a supply factor—may affect the volume of IBRD loans.[8]

A similar conceptual difficulty in separating supply and demand factors arises also in the case of IDA. The IDA does not intermediate funds; instead it receives contributions from donors and lends to recipient countries. Because of the highly concessional terms, IDA loans are largely supply-determined. However, the allocation of IDA funds are guided by "need" and country policy performance.[9]

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[8] See World Bank 2000a, Section VI "World Bank Finances", and also Gilbert and Vines 2000, chapters 1 and 2 for a detailed description of World Bank financial structure.

[9] As Easterly (1999) points out, a typical model used for aid allocation in multilateral institutions is based on the investment-savings gap—or "need"—as implied by Harrod-Domar growth models. Birdsall, Claessens and Diwan (2001) found that aid allocation in the HIPC was marked by defensive lending and non-selectivity—i.e., countries with larger debt burdens received more aid than those with better policies—again underscoring the importance of the external financing gap.

In the rest of this section, we present empirical results for IBRD lending commitments using aggregate data over the last two decades, and panel data for 30 major IBRD borrowers for the period FY1987-99. Following that, we estimate a variation of equation (1) for IDA lending commitments using aggregate data as well as a panel data for 44 IDA borrowers.

3.1. Data

Data for World Bank lending are obtained from the Finance Complex of the World Bank (FINCR). Debt service payments on long-term debt and short-term debt (by original maturity) are taken from the World Bank's Global Development Finance (GDF) database (World Bank 2000b). Data on international reserves are taken from International Financial Statistics published by the IMF. Country risk ratings are obtained from the Institutional Investor. The 10-year US interest rates are from the US treasury. The Bank's fiscal year runs July-June. The convention followed in the econometric estimation is to treat calendar year 1999 as comparable to fiscal year 2000 and so on.

3.2. Results on IBRD lending commitments

Table 1 shows results on total lending commitments using aggregate data for the period FY1980-1999, and on total lending, adjustment lending and investment lending respectively using panel data for FY1987-1999. There is no convenient indicator for country risk rating at the aggregate level, so this variable is dropped from the analysis of aggregate data.[10] In all four regressions, the coefficients of debt service (*LTDS+ST*) and international reserves (*FR*) have the correct signs. Regression (1) shows that these two variables (along with a dummy for the Asian crisis) explain 79 percent of the variation in IBRD total lending commitments.

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[10] We could have used an indicator such as EMBI spread, but it does not have adequate country coverage, and the available time series for this variable is short.

The coefficient of debt service payments is highly significant (and positive) in the case of IBRD total commitments (regression 2), but somewhat unexpectedly—considering that adjustment lending is more in line with balance of payments support than total lending— this coefficient is not significant in the case of adjustment lending (regression 3),[11] and its significance level is weaker in the case of investment lending (regression 4). This is perhaps a reflection of the fact that for financing external gap, a borrowing country is more interested in the total volume of financing (i.e., adjustment plus investment lending) rather than its composition. Also, demand for adjustment lending may not arise except in abnormal, crisis-type situations, since typically (though not always) an adjustment loan from the IBRD is preceded by an IMF program. Finally, supply-side guidelines stipulate that the share of adjustment loans, excluding debt and debt service reduction loans, should not exceed 25 percent of total loans in a fiscal year (World Bank 2000a, p 112): although this is not a rigid guideline and the limit was exceeded after the Asian crisis, it implies some degree of ad-hoc rationing of adjustment lending at the country level.

The panel data regressions—based on 30 IBRD borrowers that accounted for over 90 percent of total IBRD loans in recent years—include *IIR*, the Institutional Investor rating of country risk. The coefficient of this variable is found to be significant and negative, reflecting that higher country creditworthiness implies better market access and less demand for IBRD lending. This is consistent with the counter-cyclical behavior of IBRD lending noted earlier.

The coefficient of the interest rate variable (*INT*) is not significantly different from 0 in the aggregate results reported in table 1, but it is found to be positive and significant in the panel data results

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[11] A regression similar to (1) in table 1 using IBRD adjustment lending commitments as the dependent variable yields a lower adjusted R^2 (65 percent) than in regression (1).

on total lending and investment lending.[12] Once again, this underscores the counter-cyclical nature of the demand for IBRD lendig: when interest rates are low, global liquidity is high and private funding may be available to IBRD borrowers, resulting in a decline in the demand for IBRD loans.

Although not shown in the tables, we found that these results are broadly unchanged when first difference of explanatory variables are added to equation (1); or when we regress IBRD lending commitments normalized by (LMIC) GDP against the ratio of long-term debt service to exports, the ratio of reserves to short-term debt, risk rating, the US interest rates and a dummy for Asia. When we regress IBRD net flows normalized by GDP against the same set of explanatory variables, the coefficients are again found to have the expected signs, although some are now not statistically significant.

Validation with out-of-sample forecasting

We carried out another robustness check of the results by examining the predictive power of the model specified in equation (1). We obtained FY2000 (i.e., calendar 1999) data on debt service from the Global Development Finance 2000, and on international reserves from the World Bank's SIMA database, and assumed that the Asian crisis was over (i.e., the dummy for Asian crisis is assumed to be 0 in FY2000). We then predicted IBRD commitments for FY2000 by applying the estimated coefficients from regression (1) of table 1 to these explanatory variables.

The model predicts a sharp decline in IBRD lending to $13.9 billion in FY2000 (figure 5). The main reasons behind this drop are: a) a sharp increase in the level of international reserves of low-and-middle-income countries in response to a turn around in their current account from a deficit of $31 billion

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[12] Note that the panel data regressions are based on a shorter sample period (FY1987-99) than the aggregate results (FY1980-2000). This is because the coefficient of *INT* changes sign, and becomes positive and significant in the latter period.

in 1998 to a surplus of $10 billion in 1999; and b) a decline in short-term debt as some large borrowers during the crisis—such as Korea—rescheduled part of their short-term debt to longer term maturities.

The predicted level of IBRD lending commitments in FY2000 at $13.9 billion is still higher than the realized lending amount of $10.9 billion. The difference can be attributed to a number of factors including political transitions in Indonesia, Argentina, Jordan and Morocco; conflict and sanctions in India and Pakistan; and poor performance in Ecuador, Russia, Ukraine. Besides, this model focuses on the demand side alone and ignores "supply side" factors.

3.3. Results on IDA lending commitments

To test whether our model of demand for Bank lending also applies to IDA loans, we estimated a slightly modified version of equation (1). Since most IDA countries do not have access to international capital markets—and *IIR* is not available for these countries—we excluded this variable from equation (1). We also replaced the dummy for Asian crisis by a dummy for fiscal 1997 during which IDA lending declined sharply, apparently owing to internal reorganization in the Bank (World Bank 1998). Results using aggregate data for the period FY1982-2000 and a panel data set (consisting of 44 IDA countries) for the period FY1980-1999 are summarized in table 2.

Once again, these results confirm the hypothesis that the level of IDA lending commitments is positively related to the debt service payments and negatively to the level of international reserves. A strong positive relationship between concessional aid flows and outstanding debt (or debt service payments) has been observed by several studies in the literature, although in a somewhat narrower context of the Heavily-Indebted Poor Countries (HIPC).[13] Birdsall and others (2001) analyzed 35 countries in

[13] Note that this literature relates to concessional aid flows to a subset of poor countries. To our knowledge, the present study is the first to show a correlation between non-concessional IBRD loans and debt service payments in middle-income IBRD-eligible countries.

Sub-Saharan Africa for the period 1977-98 and found evidence of defensive or forced lending—i.e., new lending from creditors (in particular, the IMF in the 1988-98 period) for the purpose of financing the service due to them. Based on a data set of 18 countries in Sub-Saharan Africa from 1975 through 1995, Devarajan, Rajkumar and Swaroop (1999) found that one-third of aid goes towards repaying the principal on past loans (see also UNCTAD 2000, Killick and Stevens 1997, Claessens and others 1997). The finding in Collier and Dollar (1999) that aid tapers in when the macroeconomic policy environment is bad—for example, during a crisis—and tapers out when the policy environment improves is also broadly consistent with the positive association between aid flows and debt service payments, and negative association between aid flows and the level of international reserves.

4. Conclusion

Econometric analyses of aggregate data as well as panel data reveal that a large part of the variations in IBRD and IDA lending commitments over the last two decades are explained by variations in debt service payments (including long-term and short-term debt) and the level of international reserves. Countries seem to demand more World Bank lending when their debt service payments increases, and when their international reserve position declines. And this is true not only during the recent crisis episodes, but also during tranquil times over the last two decades. To a lesser extent, investor confidence and global liquidity conditions—represented by Institutional Investor country risk rating and the US interest rates respectively—are also found to influence the demand for IBRD lending.

These results indicate that resource transfer remains a dominant consideration behind borrowing from the World Bank. Also such borrowing tends to be counter-cyclical. These results may not surprise those familiar with the pleas for "positive net flows" from borrowing countries, or to those familiar with instruments such as Debt and Debt Service Reduction Loans and Sectoral Adjustment Loans which are

directly related to debt service payments of borrowers. (See World Bank 2000c for a description of IBRD and IDA lending instruments.)

These results do not rule out defensive or forced lending—which has been noted in the context of HIPC in Birdsall et al. (2001)—by which some parts of new lending may have been committed to simply avoid defaults on past IBRD or IDA debt. However, defensive lending may have been less significant in the context of IBRD loans: Although preliminary results indicated that the amortization due on past IBRD loans had a significant influence on the aggregate level of new IBRD lending, such evidence from analysis of panel data was not statistically significant at the country level. This is understandable in middle income countries such as Argentina, Korea or Thailand where debt service payments on IBRD are quite small, and yet, large IBRD commitments were made following the recent financial crisis. Thus, it appears that the overall supply of IBRD lending is guided by "positive net flow" considerations, which is then allocated to different countries according to the financing gap.

Short-term, counter-cyclical borrowing from the Bank during a crisis is consistent with the Bank's role as a lender of last resort, and also its core objective of fighting poverty in a manner similar to the effects of humanitarian aid in the aftermath of a natural disaster. Bank lending even during a crisis may lead to reforms, and an improvement in the policy and institutional environment with a time lag (Ratha 2001).

However, borrowing from the Bank to fill "the financing gap" in general and to service debt in particular may not be entirely consistent with the Bank's long-term poverty reduction objective. To make a lasting impact on growth and poverty in a recipient country, Bank loans combined with conditionality should be able to increase investment "even more than one-to-one" (Easterly 1999). Yet, if Bank loans are used for debt service payments, its impact on investment is almost certain to be less than one-to-one. This may in part explain Easterly's (1999) finding that the aid-investment relationship failed to be greater than one in 82 out of 88 aid-recipient countries during the period 1965-95. Such lending may also create

incentives for borrowers to delay reforms necessary for growth and poverty reduction (Easterly 2000, Svensson 2000).

Such borrowings also violate selectivity by which official assistance is allocated to countries with good policies (Birdsall et al. 2001). For example, if Bank lending has an impact on growth and poverty in a good macroeconomic policy environment, a marginal dollar of loan is better spent not during a crisis, but only after stabilization has been achieved after a crisis. This argument has been made forcefully by Collier and Dollar (1999), and Collier (2000) in the context of concessional aid flows to poor countries: Based on the Burnside and Dollar (1997) finding that aid is more effective in a good policy environment, aid should "taper in" after a crisis; yet, in reality, it tends to "tapers out".

The finding that even investment lending commitments are related to debt service payments implies that aid fungibility noted in the context of Sub-Saharan Africa in Devarajan and Swaroop (2000) may be more widespread than previously believed. If Bank lending is fungible and there is no guarantee that a particular Bank loan is financing an identified investment project or program, there is a case to be made for greater use of programmatic lending (with well-defined conditionality). Also, since financing needs are bound to increase in future as developing economies become larger, and more integrated with volatile international capital markets, there is likely to be a greater need for fast-disbursing, contingent program lending facilities from the World Bank.

Our results also have some implications for the debate surrounding the delineation of the roles of various multilateral institutions. If a short-term resource transfer motive has a significant influence on developing countries' desire to borrow from the Bank, it would be difficult for the Bank to refrain from providing short-term, counter-cyclical liquidity support, and focus exclusively on long-term structural programs, as has been suggested by some authors (Lerrick 1999, Summers 1999).

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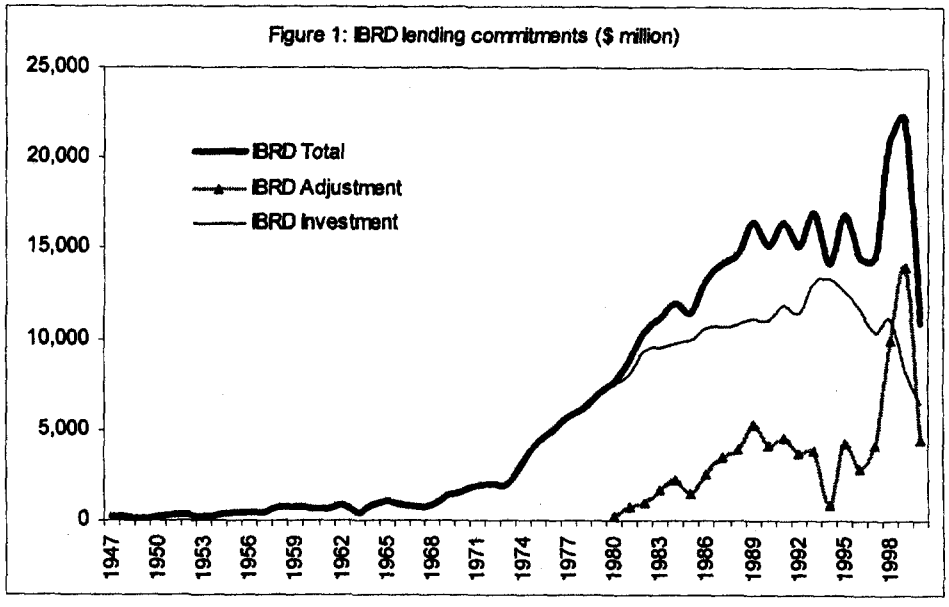


Figure 1: IBRD lending commitments ($ million)
25,000
20,000
15,000
10,000
5,000
0
IBRD Total
IBRD Adjustment
IBRD Investment
1947
1950
1953
1956
1959
1962
1965
1968
1971
1974
1977
1980
1983
1986
1989
1992
1995
1998

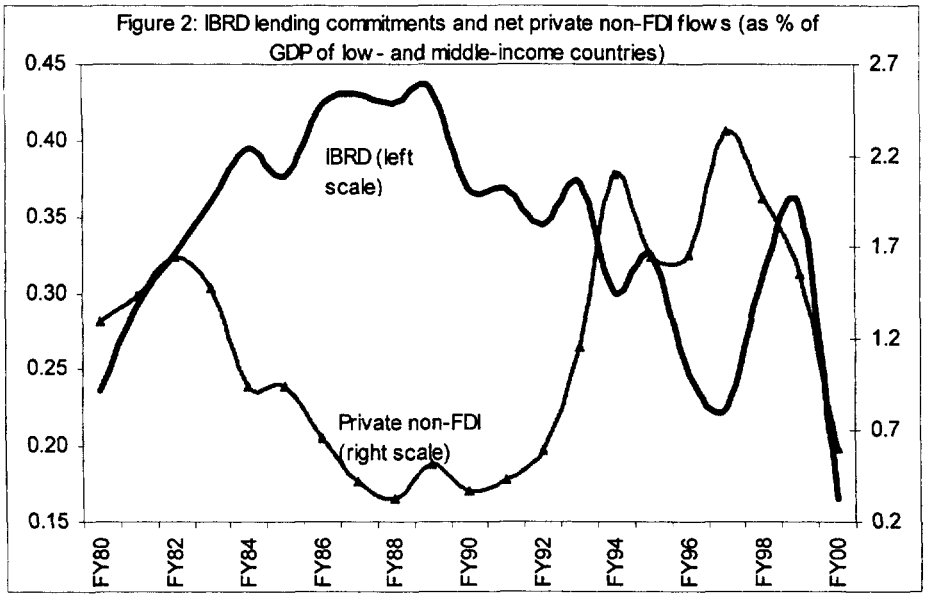


Figure 2: IBRD lending commitments and net private non-FDI flows (as % of GDP of low- and middle-income countries)
0.45
0.40
0.35
0.30
0.25
0.20
0.15
2.7
2.2
1.7
1.2
0.7
0.2
IBRD (left scale)
Private non-FDI (right scale)
FY80
FY82
FY84
FY86
FY88
FY90
FY92
FY94
FY96
FY98
FY00

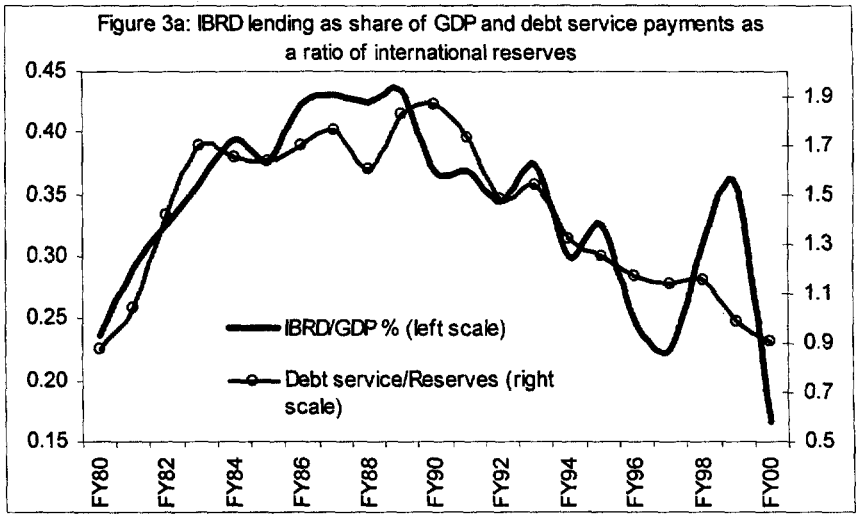


Figure 3a: IBRD lending as share of GDP and debt service payments as a ratio of international reserves
0.45
0.40
0.35
0.30
0.25
0.20
0.15
1.9
1.7
1.5
1.3
1.1
0.9
0.7
0.5
IBRD/GDP % (left scale)
Debt service/Reserves (right scale)
FY80
FY82
FY84
FY86
FY88
FY90
FY92
FY94
FY96
FY98
FY00

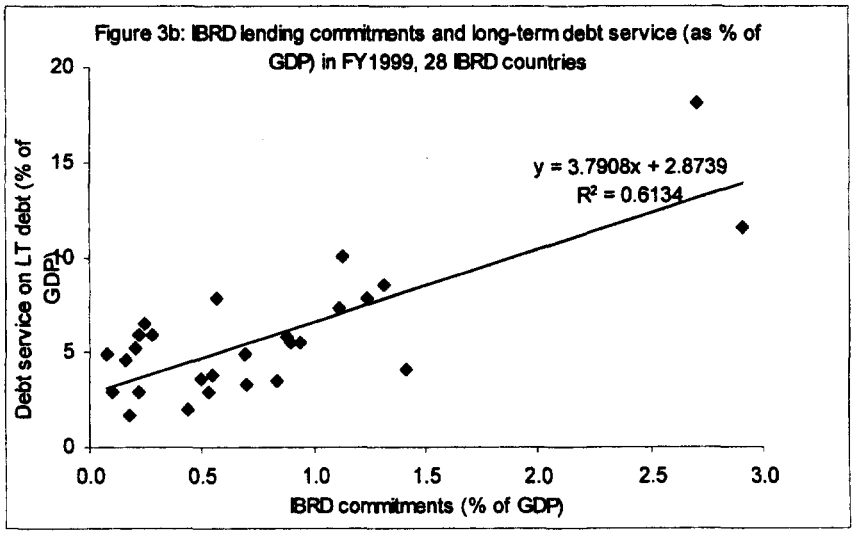
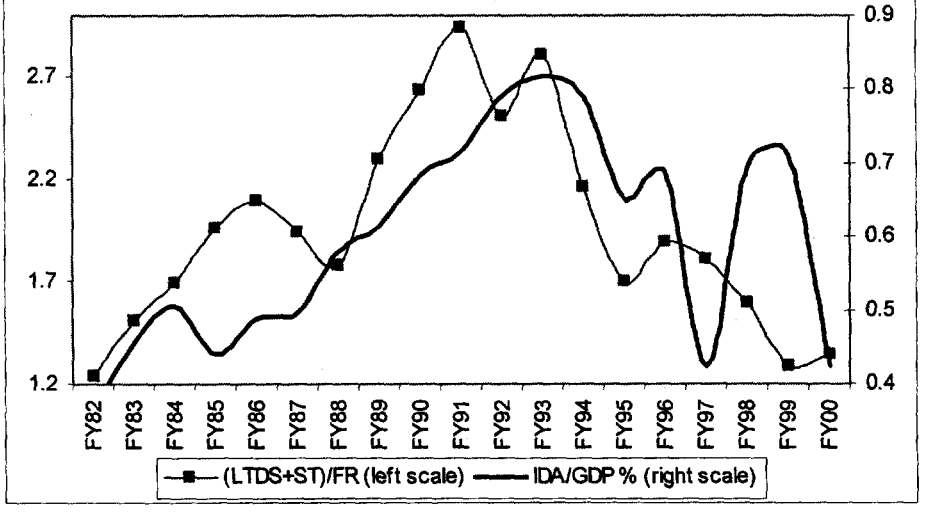


Figure 3b: IBRD lending commitments and long-term debt service (as % of GDP) in FY1999, 28 IBRD countries
Debt service on LT debt (% of GDP)
IBRD commitments (% of GDP)
y = 3.7908x + 2.8739
R² = 0.6134
0
5
10
15
20
0.0
0.5
1.0
1.5
2.0
2.5
3.0

Figure 4: IDA loans as a share of GDP of low-income countries, and ratio of debt service payments to reserves



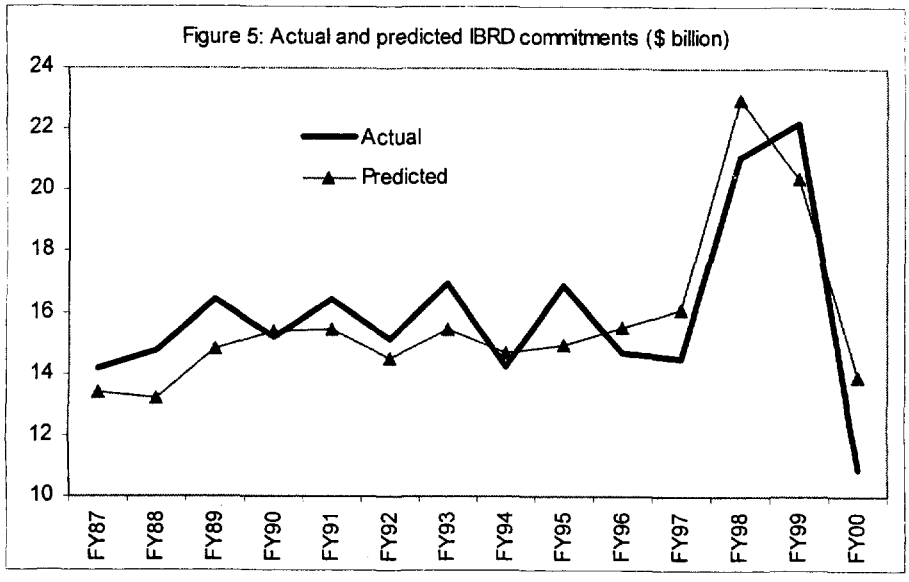


Figure 5: Actual and predicted IBRD commitments ($ billion)
24
22
20
18
16
14
12
10
Actual
Predicted
FY87
FY88
FY89
FY90
FY91
FY92
FY93
FY94
FY95
FY96
FY97
FY98
FY99
FY00

Table 1: Results on IBRD commitments

Dependent variable:	(1) log(*IBRD/GDP*) (Aggregate data)	(2) log(*IBRD/GDP*) (Panel data)	(3) log(*IBRDadj/GDP*) (Panel data)	(4) log(*IBRDinv/GDP*) (Panel data)
C	-0.792* (-1.8)	..	..	..
log((*LTDS+ST*)/*GDP*)	0.622*** (3.6)	0.674*** (4.0)	0.120 (0.5)	0.346* (1.81)
log(*FR/GDP*)	-0.898*** (-6.8)	-0.097 (-1.2)	-0.233* (-1.7)	-0.137 (-1.6)
Institutional Investor Rating	..	-0.034*** (-3.8)	-0.043*** (-3.2)	-0.014 (-1.3)
INT	-0.003 (-0.2)	0.204*** (3.9)	0.05 (0.4)	0.176*** (3.0)
Dummy for the Asian crisis (FY98-99=1, 0 otherwise)	0.310*** (3.2)	0.415*** (2.8)	0.540** (2.0)	-0.168 (-1.0)
Adjusted R-squared	0.72	0.49	0.50	0.39
Durbin-Watson stat	1.7	2.1	1.6	2.1
No. of observations	20	272	97	262
Sample	FY1980-99	FY1987-99	FY1987-99	FY1987-99

Regression (1) shows results from aggregate data, whereas (2)-(4) show those from panel data. In (1), *LTDS, ST, FR and GDP* refer to the respective variables of low- and middle-income countries. Panel data regressions include fixed effects, but these coefficients are not reported. The panel includes 30 IBRD countries for the sample period mentioned under each regression. T-statistics in parentheses, estimated using White's heteroskedasticity-consistent standard error. ***, **, and * indicate significance at 1%, 5% and 10% levels respectively.

The panel consists of annual time series data for the period FY1987-99 for 30 major IBRD borrowers: Algeria, Argentina, Brazil, Bulgaria, Chile, China, Colombia, Croatia, Ecuador, Egypt, Hungary, India, Indonesia, Jordan, Kazhakstan, Korea, Malaysia, Mexico, Morocco, Pakistan, Peru, the Philippines, Poland, Romania, Russia, Thailand, Tunisia, Turkey, Ukraine and Venezuela.

Table 2: Results on IDA commitments

Dependent variable:	(1) log(*IDA/GDP*) (aggregate data)	(2) log(*IDA/GDP*) (panel data)	(3) log(*IDAadj/GDP*) (panel data)	(4) log(*IDAinv/GDP*) (panel data)
C	-1.12 (1.5)	..	..	..
Log((*LTDS+ST*)/*GDP*)	0.692*** (2.9)	0.712*** (6.2)	1.189*** (3.8)	0.307*** (2.9)
log(*FR/GDP*)	-0.428*** (-3.2)	0.023 (0.6)	-0.149* (-1.7)	0.076** (2.4)
INT	-0.027 (-0.9)	0.020 (1.1)	0.217*** (4.2)	0.017 (1.0)
Dummy for FY97	-0.470*** (-3.2)	-0.698*** (-3.1)	-0.828*** (-2.4)	-0.289* (-1.7)
Adjusted R-squared	0.70	0.28	0.24	0.33
Durbin-Watson stat	1.6	2.0	2.2	2.0
No. of observations	19	569	246	540
Sample	FY1982-2000	FY1980-1999	FY1980-1999	FY1980-1999

Regression (1) shows results from aggregate data, whereas (2)-(4) show those from panel data. In (1), *LTDS, ST, FR and GDP* refer to the respective variables of low-income countries. Panel data regressions include fixed effects, but these coefficients are not reported. The panel includes 53 IDA-only and "blend" countries. T-statistics in parentheses, estimated using White's heteroskedasticity-consistent standard error. ***, **, and * indicate significance at 1%, 5% and 10% levels respectively.

There are 44 countries in the IDA panel: Angola, Bangladesh, Benin, Bolivia, Burundi, Cameroon, Cape Verde, Central African Republic, Chad, China, Congo, Dem. Rep., Congo, Rep., Cote d'Ivoire, Djibouti, Equatorial Guinea, Ethiopia, Gambia, Ghana, Guinea, Guinea-Bissau, Guyana, Haiti, Honduras, Kenya, Lesotho, Liberia, Madagascar, Malawi, Mali, Mauritania, Nepal, Nicaragua, Niger, Rwanda, Senegal, Sierra Leone, Somalia, Sri Lanka, Sudan, Tanzania, Togo, Uganda, Yemen, Zambia.

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